

Applic. No.: 09/483,737  
Prel. Amdt. Dated May 26, 2006

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1, 9-10, and 15 remain in the application. Claims 1 and 15 have been amended. Claims 2-8, 11-14, and 16-17 have been previously cancelled. Claims 1 and 9-10 have been previously withdrawn. Rejoinder of claims 1 and 9-10 has been requested.

In consideration of the Examiner's comment that the claim language of the instant application does not exclude a buffer layer between an adhesive/diffusion barrier and a solder, the language of claims 1 and 15 has been amended to recite that the adhesive/diffusion barrier is directly provided on the solder, thus excluding a buffer layer between the adhesive/diffusion barrier and the solder.

Moreover, the adhesive barrier of the invention of the instant application has two functions, to be an adhesive and to be a barrier, whereas the adhesive of Fister (WO 88/03705) is not described to have a barrier function.

The adhesive barrier or the diffusion barrier of the invention of the instant application has the function to protect the

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chip from Sn diffusing into adjacent material. The barriers protect the chip surface to avoid adverse effects arising from an increasing Sn content in the chip. Such a teaching is not disclosed in any prior art.

Finally, Applicants believe that a combination of Ishii (JP 6-326210) and Fister would not lead to the invention of the instant application for the following reasons:

An important aspect of the invention of the instant application is the use of an AuSn solder having a hypereutectic concentration of Sn, i.e. the invention of the instant application is based on the finding that Sn diffuses away from the solder, for example, into adjoining layers of metal such as the substrate. The loss of Sn provides for a continuous reduction in the melting temperature during the soldering procedure, which results in the advantages of the invention of the instant application.

According to Ishii, for example Fig. 2, a barrier layer 7a is provided between a solder 8 and a substrate 40. As a result, the barrier layer is located beneath the solder. If this technical teaching would be combined with Fister, additionally an adhesive layer 19 would be provided between the chip and the solder on a buffer layer. Assuming that this adhesive

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layer has the same function as the adhesive barrier layer of the invention of the instant application, i.e. adopting the Examiner's view, and omitting the buffer layer, then the adhesive layer of Fister is located above the solder.

Consequently, a combination of Ishii and Fister would lead to a structure wherein the solder is sandwiched between two barrier layers, one above and one beneath the solder layer. As a result, Sn is no longer able to diffuse out of the solder because the diffusion is blocked totally by both barrier layers. The technical objects and advantages of the invention of the instant application may, therefore, not be achieved.

Due to above reasons, Applicants believe that the cited references would actually lead a person skilled in the art away from the teaching of invention of the instant application

In view of the foregoing, reconsideration and allowance of claim 15 are solicited. Rejoinder of method claims 1 and 9-10 is requested upon allowance of product claim 15 under MPEP 821.04 ("if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product claim will be rejoined").

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In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to 37 CFR Sections 1.16 and 1.17 to the Deposit Account of Lerner Greenberg Stemer LLP, No. 12-1099.

Respectfully submitted,

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For Applicants

YC

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